Claims

Claim 1 (original): A virus suppressing factor (VSF) protein having the following properties:

(a) it is increasingly produced in an immune cell stimulated by a variant of encephalomyocarditis virus, EMC-DV;

(b) it has an antiviral activity which is unchanged by immunoprecipitation and immunoneutralization;

(c) it is inactivated by proteinase K;

(d) it is not one of the group of antiviral cytokines consisting of IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, G-CSF, GM-CSF, TNF-α, TNF-β, IFN-α, IFN-β, IFN-γ, TGF-β, RANTES, MIP-1α, MIP-1β, MIP-1γ, MCP-1, MCP-3, IP-10 and lymphotactin;

(e) it comprises about 55 kDa polypeptide (H), about 30 kDa polypeptides (L1 and L2) and about 25 kDa polypeptide (L3); and

(f) it has a molecular weight of over about 100 kDa.

Claim 2 (currently amended): ~~A~~ The virus suppressing factor (VSF) protein ~~having the following properties:~~ of claim 1, wherein:

~~(a) it is increasingly produced in an immune cell stimulated by a variant of encephalomyocarditis virus, EMC-DV;~~

~~(b) it has an antiviral activity which is unchanged by immunoprecipitation and immunoneutralization;~~

~~(c) it is inactivated by proteinase K;~~

~~(d) it is not one of the group of antiviral cytokines consisting of IL-1, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, G-CSF, GM-CSF, TNF-α, TNF-β, IFN-α, IFN-β, IFN-γ, TGF-β, RANTES, MIP-1α, MIP-1β, MIP-1γ, MCP-1, MCP-3, IP-10 and lymphotactin;~~

~~(e) it comprises about 55 kDa polypeptide (H), about 30 kDa polypeptides (L1 and L2) and about 25 kDa polypeptide (L3);~~

~~(f) it has a molecular weight of over about 100 kDa;~~

~~(g)~~ (a) the H polypeptide has a DNA sequence designated as SEQ ID NO: 1 and an amino acid sequence designated as SEQ ID NO: 2; and

~~(h)~~ (b) the L3 polypeptide has a DNA sequence designated as SEQ ID NO: 3 and an amino acid sequence designated as SEQ ID NO: 4.

Claim 3 (currently amended): The VSF protein as set forth in claim 1 ~~or 2~~, wherein the antiviral activity is to suppress proliferation or replication of a virus belonging to the genus *Orthomyxoviridae*, *Picornaviridae*, *Retroviridae* or *Herpes*.

Claim 4 (currently amended): A method of producing a hybridoma, comprising fusing an immune cell stimulated by a variant of encephalomyocarditis virus, EMC-DV, with a tumor cell, and producing the hybridoma secreting a virus suppressing factor (VSF) protein.

Claim 5 (currently amended): A method of preparing a virus suppressing factor (VSF) protein, comprising producing a hybridoma secreting [a]the VSF protein by fusing an immune cell stimulated by a variant of encephalomyocarditis virus, EMC-DV, with a tumor cell, culturing the said hybridoma, and isolating the VSF protein from a culture fluid of the said hybridoma.

Claim 6 (original): A method of preparing a virus suppressing factor (VSF) protein, comprising producing a hybridoma secreting the VSF protein by fusing an immune cell stimulated by a variant of encephalomyocarditis virus, EMC-DV, with a tumor cell, injecting the said hybridoma into an animal, and isolating the VSF protein from an ascitic fluid obtained from the said animal.

Claim 7 (currently amended): The method as set forth in claim 5 ~~or 6~~, wherein the VSF protein is isolated from the culture fluid or ascitic fluid using a Blue Sepharose column, a Protein A agarose column, a hydroxyapatite resin column, an FPLC column, or sucrose gradient.

Claim 8 (original): A hybridoma producing a virus suppressing factor (VSF) protein, which is prepared by fusing an immune cell stimulated by a variant of encephalomyocarditis virus, EMC-DV, with a tumor cell.

Claim 9 (original): The hybridoma as set forth in claim 8, wherein the hybridoma is a hybridoma 4D1B (accession number KCLRF-BP-00052).

Claim 10 (currently amended): A pharmaceutical composition for prevention and treatment of viral infections, comprising a therapeutically or preventively effective amount of the VSF protein of claim 1 ~~or 2~~ and a pharmaceutically acceptable carrier.

Claim 11 (currently amended): A method of preventing or treating viral infections, comprising administering a therapeutically or preventively effective amount of the VSF protein of claim 1 ~~or 2~~ to a subject suffering from a viral infection.

Claim 12 (new): The method as set forth in claim 6, wherein the VSF protein is isolated from the culture fluid or ascitic fluid using a Blue Sepharose column, a Protein A agarose column, a hydroxyapatite resin column, an FPLC column, or sucrose gradient.